

Modern Concepts of Cardiovascular Disease

Published monthly by the AMERICAN HEART ASSOCIATION

1775 BROADWAY AT 58TH STREET, NEW YORK, N. Y.

DR. EMMET B. BAY, Chicago, *Editor*

DR. WRIGHT R. ADAMS, Chicago, *Associate Editor*

VOL. XVIII

SEPTEMBER, 1949

No. 9

HEART DISEASE IN THE SCHOOL-AGE CHILD

In April 1949, about 25,798,000 children—roughly one-sixth of our total population—were enrolled in the elementary and high schools of the Nation. It is probable that at least a quarter of a million of these children have some form of heart disease, and heart disease accounts for more deaths than any other disease in the age group of 5 to 19 years. Because heart abnormality is so common, and because of the future implications of an early diagnosis of heart disease, the medical problem of its discovery and treatment in school children is one of vast importance. Work, play, marriage—in fact, the whole course of the child's future life—are involved in the evaluation of his cardiac status.

As the school's purpose is to prepare the child for effective living, it is apparent that the physician and the school must work together in the discovery, supervision, and education of the child with heart disease. The school's full potential in this respect has not yet been achieved, partly because in many localities those interested in heart disease in children have not exerted the leadership required, and partly because, all too frequently, the medical personnel have not been equal, in quality or quantity, to the task of developing working procedures based on modern concepts of heart disease. It is the purpose of this review to discuss briefly the ways that physicians and schools can work together more effectively in the discovery and management of heart disease in school children.

Rheumatic and Congenital Heart Disease

Preceding the discussion of the methods of discovery and management, it might be well to view the comparative distribution of the types of heart abnormalities to be found in this age group. It was once thought that 80 to 90 percent of organic heart disease found in school-age children was of rheumatic origin. More recent observations in Cincinnati¹, Louisville², New York, and England³, however, have indicated that the proportion of children with acquired organic heart disease of rheumatic etiology is between 45 and 69 percent. These findings are consistent with statistical studies which show a downward trend of mortality from rheumatic heart disease and rheumatic fever in young people for the past several decades. Despite these more optimistic figures, this is still a major problem in this age group. Examinations within the 5 to 19 year groups in various parts of the country have discovered a range of from 2 to 4 cases per 1,000

(in the temperate zones) to as many as 16.3 per thousand (in zones where rheumatic fever appears to be endemic)⁴⁻⁶.

Greater alertness on the part of examining physicians may partially account for the increase in the incidence of congenital heart disease among the children concerned in these studies. In any event, the brilliant advances in the surgical treatment of congenital heart disease make the recognition of these defects in school children of increasing importance. From the point of view of possible correction or improvement of the condition, the most important congenital defects at the present time are patent ductus arteriosus, congenital pulmonary stenosis, and coarctation of the aorta.

The School Physician

At the core of an adequate school health program should be the school physician, who may act as a middleman or go-between for the school, the family, and the physician responsible for the child's treatment. He selects children with possible heart disease; informs and persuades the family to seek medical attention for the child; interprets the findings of his own examination and other school information to the family physician or the clinic; interprets the reports from family physician or clinic to the school nurse and to the child's teacher; and recommends adjustments in the school program on the basis of the medical findings. Since heart disease is such an important diagnostic problem in schools, he should be particularly well informed and have more than average training in examination of the heart and knowledge of the general signs and symptoms of heart disease in children. At the same time, he should bear in mind that his role is that of a diplomat in the field of medical practice. No matter how much he knows about heart disease nor how careful his examination, the limits of his responsibility make it necessary that he consider his function in the school a screening process.

Case Finding

Adequate *annual* examination of school children by the school physician as a case-finding procedure for heart disease, or other health problems, entails a prohibitive public expense. On the other hand, *periodic* examinations at critical times during a child's school life—for example, on entering school, in the fourth grade, or on leaving elementary school

ANNUAL MEETING

The Annual Meeting and Twenty-Third Scientific Sessions of the American Heart Association will be held at the Fairmont Hotel, San Francisco, June 22-25, 1950. All those desiring to attend should make room reservations at the earliest possible date.

and on entering and leaving high school—are possible. To keep down the cost of this service, families should be encouraged by the schools to have their children examined by their own private physician or at a clinic. School medical examinations should be reserved for those children who are not otherwise examined. This distributes the examination load also and helps to develop the interest of community physicians in the health and supervision of school children, as well as avoiding duplication of medical service.

These periodic examinations make it possible to maintain a sharp lookout for congenital disease among the school-age population. It is recommended that palpation of the femoral and dorsalis pedis arteries be a routine procedure in it. In boys, palpation of the femoral arteries is easily done at the time of examination for hernia. In girls, palpation of the dorsalis pedis may be more feasibly incorporated as part of the foot examination. More cases of coarctation of the aorta would be picked up if these simple screening procedures were routinely employed.

Even more attention should be given to developing screening techniques to discover school children who may have active rheumatic fever. A successful procedure is the day-to-day observation of pupils by classroom teachers and subsequent referral for nursing and medical attention of those children who show signs of being physically below par, e.g., pallor, fatigue, loss of weight, or failure to gain. It is very rare to discover acute rheumatic fever on routine examination, whereas chorea or rheumatic fever will not uncommonly be brought to light by teachers who know what to look for and are encouraged to refer suspicious cases to the school nurse and physician for further study. In Astoria⁷, where this plan was put into effect, 7 percent of the children referred by teachers on the basis of signs and symptoms were found, on medical work-up, to have organic heart disease or were classified as possible or potential heart disease patients because of the nature of the heart findings or a history of rheumatic fever. Thus, also, early cases of rheumatic fever can be discovered by follow-up examinations on children who have been ill at home with fever, sore throat, general malaise, and perhaps joint pains.

Medical Findings

Once the school physician suspects heart disease, the problem of telling the family confronts him. Our belief is that the difficulties at this point arise over the techniques used to reach and inform the family and their physician. One good way to do this is to invite an adult member of the family to be present when the child is examined in school. Better understanding of this problem by school personnel would avoid some of the poor health education which has been present in the past. Unless a parent is present at the school medical examination, the family's first knowledge that the school suspects heart disease may be delivered in a cryptic note, which may be ignored or may cause great alarm and unnecessary expense because the parents rush out to get confirmation from other physicians. If they are then told that there is nothing wrong with the child, they are resentful. At the time of this examination, also, a written report should be sent to the family physician.

In the matter of diagnosis, when the school is advising the family physician of the suspicion of heart disease, it is timely to offer diagnostic consultation service (when available) to him, since it is essential that the child having congenital defects, especially, be referred to a heart specialist for anatomical diagnosis. When this offer is made tactfully, the family doctor will usually take advantage of it. The high percentage (60%) of private physi-

cians requesting consultation in the sections of New York City where such a service is offered is proof of this. These consultation centers perform a major service in preventing cardiac neuroses and invalidism by removing the label of heart disease from many children who have "innocent" or "functional" murmurs. Through their diagnoses, also, many children with inactive rheumatic heart disease and acyanotic congenital heart disease have been allowed greater activity after study of their cases; it has been too infrequently realized that they need not lead restricted lives.

Included in the functions of this service are: (1) accurate diagnosis of cardiac status; (2) education of school health personnel, including the administrator and teachers, in the modern concepts of heart disease; (3) recommendations as to suitable physical activity for the child both in and out of school, and advice on future occupation; (4) consultation service for the family physician; and (5) education of the consultant in public health aspects of heart disease and the special needs of school children. An increasing number of communities with well-organized school health programs are developing cardiac consultation services such as this.

Interpreting Medical Findings

Once a child's case is discovered and diagnosed, there is the problem of interpreting the medical findings. The parents must be instructed concerning the necessary limitations of the child's activities, which often are not too rigorous in the light of modern concepts. The outside physician who has been called upon to treat the child, either privately or clinically, should be contacted personally in order that there be an adequate and accurate exchange of information between him and the school personnel, and in order that he and the school may cooperate in managing the child's treatment and following his progress. In addition the school physician must instruct the school personnel in methods of cooperating with him in this management⁸.

He must also aid school administrators in planning for educational progress of the child concerned. A school should be able to offer the cardiac child a lightened school program for as long as his physician advises. In some cases special classes can be planned to permit a more gradual return to normal or modified activity for the child convalescent from a rheumatic attack, for example. It is important, too, that school personnel be made to realize the tremendous responsibility they have to prepare children with heart disease for a life compatible with their cardiac limitations. The physician should work with vocational counsellors to make guidance possible beginning with the upper elementary grades. The child should be encouraged to stay on into high school and to lay the best foundation for the type of work he desires within the range of his physical handicap.

George M. Wheatley, M.D.
New York, N. Y.

REFERENCES

1. Rauh: *American Heart Journal*, 1939, 18, 705.
2. Weiss: *American Heart Journal*, 1941, 22, 112.
3. Price: *British Medical Journal*, 1949, March 26, 515.
4. Wedum: *American Journal of Public Health*, 1945, 35, 1271.
5. Alway and Holley: *The Prevalence of Heart Disease in Salt Lake City High School Students*, presented before the School Health Section, APHA, Nov. 1948.
6. DeLee: Unpublished report of Lower East Side Rheumatic Fever Project, New York, N. Y., Sept. 1948.
7. Nyswander: *Solving School Health Problems*, New York, Commonwealth Fund, 1942.
8. *Rheumatic Fever and the School Child*, Special Report, Pediatrics, 1948, 2, No. 3 (Sept.).

ew
oof
jor
id-
om
al"
hil-
ya-
ved
nas
not

(1)
ion
ais-
art
rsi-
ool,
ion
ion
art
An
or-
ar-

ed,
cal
ng
es,
of
nas
ely
ler
of
el,
ate
his
in-
at-

un-
ed.
a
si-
be
al
om
nt,
he
il-
th
rk
si-
es.
gh
pe
al

D.

1.
alt
ol
ic
k.
li-

~ N O T E S ~

~ N O T E S ~

